

automobile exhaust may be as much as 5,000 times greater than the EPA standard.

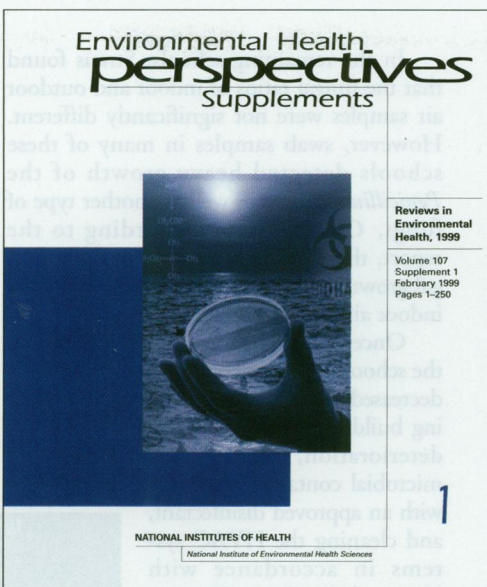
While the Cornell paper paints a discouraging picture of life on earth today, Pimentel hopes some good will come of the bad news. "We hope that our study will encourage more up-to-date reporting on diseases," he says.

## Annual Review of the Environment

The association between nonionizing radiation and breast cancer, the human health implications of phenolic compounds in plants, and the impact of global climate change are among the environmental health issues given in-depth treatment in the annual review issue of *EHP Supplements*, the sister publication to *EHP*. This year's review issue, due out this month, contains 17 original peer-reviewed monographs on some of the past year's most pressing environmental health topics. Each review article contains extensive background information, as well as an author summary and analysis of the newest developments in the field.

For the 1999 review issue, Leeka I. Kheifets of the Electric Power Research Institute in Palo Alto, California, and C. Chantal Matkin of Stanford University in California examine the association between nonionizing radiation (electric and magnetic fields, or EMFs) and breast cancer. Because breast cancer occurs more often in industrialized countries, some researchers have theorized that it may be attributable to the increased use of electric power. Kheifets and Matkin assess more than 35 residential and occupational epidemiological studies that investigated the association between EMFs and breast cancer. Although most of the data do not unequivocally support an association between EMFs and breast cancer, the scientists point to the limited statistical power of the studies, as well as the possibility of misclassification and bias present in much of the existing data, as reasons why such an association should not yet be ruled out. "Given the ubiquitous nature of EMF exposure and the high incidence of breast cancer," they write, "even a small risk will potentially have a substantial public health impact." This review comes on the heels of the Working Group Report, funded by the NIEHS Electric and Magnetic Fields Research and Public Information Dissemination Program, that ruled that EMFs may be considered possibly carcinogenic to humans.

Otto Daniel and colleagues from the Swiss Federal Office of Public Health and the Swiss Federal Institute of Technology, both in Zürich, study the toxic and bene-



ficial human health effects of certain phenolic compounds. These compounds are produced in plants to serve a number of purposes, including repelling herbivores, pigmentation, protection against UV light, and biocidal defense against bacteria and fungi. External stimuli such as chemical stress from heavy metals and pesticides can alter the chemical composition or quantities of phenolic compounds in a plant; depending on its concentration, chemical structure, and any external modulation, a given phenolic compound might be either toxic or beneficial to humans. The scientists examined three such compounds. Resveratrol, which is found in grapes and peanuts, has been found to inhibit the synthesis of substances that cause blood clotting, possibly offering protection against heart disease and thrombosis. Flavonoids, which are found in almost every food or beverage of plant origin, act as antioxidants, inhibit blood coagulation, promote vasodilation, and have anti-inflammatory effects—benefits that appear to outweigh their variable mutagenic properties. Furanocoumarins, which are found in plants such as limes and celery, can cause phototoxic burns but have also been harnessed for use in psoralen UVA therapy, which is used to treat skin conditions such as psoriasis and cutaneous T-cell lymphoma.

Janice Longstreth of the Waste Policy Institute in Washington, DC, and the Institute for Global Risk Research in Bethesda, Maryland, discusses the regional impact of global climate change in the United States. She says that many public health officials feel that any increases in health effects related to global climate change will be easily absorbed by the health care systems in place, but

Longstreth warns that this position may be dangerously shortsighted. She discusses the possible effects of higher temperatures, increases in ground-level ozone and other air pollutants, changes in vector, host, and infectious agent habitats, rising water temperatures, and increases in extreme events such as hurricanes and tornadoes. She also discusses how such changes may vary among regions, possibly burdening some areas more than others with a shortfall between health care needs and resources.

A second public health paper in the review issue looks at methods for maintaining control of pathogens in drinking water while simultaneously ensuring that disinfection by-products do not present health risks. Other papers cover cellular mechanisms such as the known signal transduction pathways that regulate cell cycle progression and DNA stability mechanisms, the relationship between toxic environmental chemicals and apoptosis, the manner in which metabolic genotypes affect individual susceptibility to cancer, and the role of the *Bcl-2* gene family in prostate cancer. Four papers address the roles of cholinesterases and acetylcholine in the developing nervous system, and others discuss current issues in toxicology, including the development of short-term estrogenicity tests for identifying hormone disruptors, the toxicology and chemistry of toxaphene compounds, the field of geographic modeling and its role in environmental epidemiology studies, and the latest data on waterborne diseases caused by bacterial, protozoal, and viral pathogens.

*EHP Supplements* is published six times each year (including the annual review issue). More information is available on the Environmental Health Information Service Web site at <http://ehis.niehs.nih.gov>.

## The Source of Sick Buildings

Indoor fungal contamination has been shown to produce allergies in building occupants. While fungi have also been suspected of playing a role in sick building syndrome (SBS), a health condition that results from poor indoor air quality, few studies to date have been able to verify this link. A recent study, however, links SBS with elevated indoor levels of the fungi *Penicillium* and *Stachybotrys*, both of which have been implicated in respiratory diseases such as asthma and pulmonary hemosiderosis. The research, which was published in the September 1998 issue of *Occupational and Environmental Medicine*, is the most comprehensive SBS